CHRYSLER LLC

Fax

To:	Examiner Mark Ruthkosky	**From:**	Gordon K. Harris, Jr., Reg. No. 28,615
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Group Art Unit: 1745

Re: Application No. 10/622,165

Attached is a Fee Transmittal (in dup.) and an Appeal Brief.

I hereby certify that this correspondence is being facsimile transmitted to the Patent and Trademark Office (Fax No. (571) 273-8300) on August 21, 2007.

Susan J. Sidwell Susan J. Sidwell

PTO/SB/17 (12-04)
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FEE TRANSMITTAL for FY 2005

Effective 10/01/2004. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 500

Complete If Known	
Application Number	10/622,185
Filing Date	July 17, 2003
First Named Inventor	Schaller et al.
Examiner Name	Mark Ruthkosky
Art Unit	1745
Attorney Docket No.	706634US1

METHOD OF PAYMENT *(check all that apply)*

☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☒ Deposit Account:

Deposit Account Number: 03-1600

Deposit Account Name: DaimlerChrysler Intellectual Capital Company LLC

The Director is authorized to: *(check all that apply)*
☒ Charge fee(s) indicated below ☒ Credit any overpayments
☒ Charge any additional fee(s) during the pendency of this application
☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1011	300	2011	150	Utility filing fee	
1012	200	2012	100	Design filing fee	
1013	200	2013	100	Plant filing fee	
1014	300	2014	150	Reissue filing fee	
1005	200	2005	100	Provisional filing fee	

SUBTOTAL (1) ($) 0

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

			Extra Claims		Fee from below		Fee Paid
Total Claims		-20 **	= 0	X		=	0
Independent Claims		-3 **	= 0	X		=	0
Multiple Dependent						=	0

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	50	2202	25	Claims in excess of 20
1201	200	2201	100	Independent claims in excess of 3
1203	360	2203	180	Multiple dependent claim, if not paid
1204	200	2204	100	** Reissue independent claims over original patent
1205	50	2205	25	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($)

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet.	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	120	2251	60	Extension for reply within first month	
1252	450	2252	225	Extension for reply within second month	
1253	1020	2253	510	Extension for reply within third month	
1254	1,590	2254	795	Extension for reply within fourth month	
1255	2,160	2255	1080	Extension for reply within fifth month	
1401	500	2401	250	Notice of Appeal	
1402	500	2402	250	Filing a brief in support of an appeal	500
1403	1000	2403	500	Request for oral hearing	
1452	500	2452	250	Petition to revive – unavoidable	
1453	1500	2453	750	Petition to revive – unintentional	
1501	1400	2501	700	Utility issue fee (or reissue)	
1502	800	2502	400	Design issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17 (q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	790	2809	395	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	790	2810	395	For each additional invention to be examined (37 CFR § 1.129(b))	
1801	790	2801	395	Request for Continued Examination (RCE)	
Other fee (specify)					

*Reduced by Basic Filing Fee Paid SUBTOTAL (3) ($) 500

4. SEARCH/EXAMINATION FEES

1111	500	2111	250	Utility Search Fee	
1112	100	2112	50	Design Search Fee	
1113	300	2113	150	Plant Search Fee	
1114	500	2114	250	Reissue Search Fee	
1311	200	2311	100	Utility Examination Fee	
1312	130	2312	65	Design Examination Fee	
1313	180	2313	90	Plant Examination Fee	
1314	600	2314	300	Reissue Examination Fee	

SUBTOTAL (4) ($)0

TOTAL FEES ENCLOSED: $500

SUBMITTED BY *Complete (if applicable)*

Name (Print/Type)	Gordon K. Harris, Jr.	Registration No. (Attorney/Agent)	28,615	Telephone	(248) 944-6525
Signature				Date	August 21, 2007

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.:	10/622,165
Filing Date:	July 17, 2003
Applicant:	ROLF SCHALLER, *et al.*
Group Art Unit:	1745
Examiner:	Mark Ruthkosky
Title:	THERMAL-INTEGRATION OF PRESSURIZED FUEL CELL SYSTEMS WITH EXPANDER
Attorney Docket:	706634US1

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P.O. Box 1450
Alexandria, Virginia 22313-1450

APPEAL BRIEF

Sir:

This is an appeal from the final rejection of claims 1-5 under 35 U.S.C.§§102(e), 103(a) and 112 in the Office Action mailed May 10, 2007.

I. REAL PARTY IN INTEREST

The Real Party in Interest is Chrysler LLC, a limited liability company organized and existing under the laws of the State of Delaware and having a place of business in Auburn Hills, Michigan.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences which would directly affect or be directly affected by or have a bearing on the Board's decision in the instant Appeal.

III. STATUS OF CLAIMS

Claims 1-5 stand rejected and are the subject of this Appeal.

IV. STATUS OF AMENDMENTS

There have been no amendments to the claims filed subsequent to the final rejection of May 10, 2007.

V. SUMARY OF THE CLAIMED SUBJECT MATTER

Applicants claim in independent claim 1 a fuel cell system comprising a fuel cell having a housing (10 - Fig. 2) enclosing an anode chamber (12 - Fig. 2), a proton exchange membrane (16 - Fig. 2) and a cathode chamber (14 - Fig. 2), the cathode chamber being separated from the anode chamber by the proton exchange membrane (Paragraph [0012]), the housing adapted to transfer waste heat of the fuel cell (Paragraph [0018]), a cathode supply line (20 of Fig. 2 with Paragraph [0013]) coupled to a supply of compressed oxygen-containing gas (Paragraph [0015]) and to the cathode chamber, a fuel supply is coupled to the anode chamber (18 of Fig. 2, with Paragraph [0012]), a cathode exhaust gas line (24 of Fig. 2 with Paragraph [0014]), a heat exchanger (100 of Fig. 2 with Paragraph [0017]) coupled to the fuel cell for receiving waste heat from the housing of the fuel cell (Paragraphs [0017] and [0018]),

and an expansion turbine (32 of Fig. 2 with Paragraph [0020]), the cathode exhaust line fluidly connecting the cathode chamber and the expansion turbine, the heat exchanger being thermally coupled to the cathode exhaust gas line between the cathode chamber and the expansion turbine (Paragraphs [0017] - [0020]), whereby the heat exchanger transfers heat energy from the fuel cell to cathode exhaust gas flowing through the cathode exhaust gas line.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The grounds for rejection to be reviewed are:

1) Rejection of claims 1-5 under 35 U.S.C. §112, first paragraph, for non-enablement.
2) Anticipation of claims 1-4 under 35 U.S.C. §102(e) by Xu, U.S. Patent No. 6,551,732.
3) Anticipation of claims 1-5 under 35 U.S.C. §102(e) by Cownden, *et al.*, U.S. Patent No. 6,316,134.
4) Unpatentability of claim 5 under 35 U.S.C. §103(a) over Xu, U.S. Patent No. 6,551,732 in view of Cownden *et al.*, U.S. Patent No. 6,316,134.

VII. ARGUMENT

Rejection Under 35 U.S.C. §112

Claims 1-5 stand rejected under 35 U.S.C. §112, first paragraph, as directed to non-enabled subject matter. Applicants respectfully traverse this rejection.

The Examiner's allegation that the specification does not support "a heat exchanger coupled to the fuel cell for receiving waste heat from the housing" is improper. As seen from Paragraph [0018], page 4, of the specification, Applicants clearly explain that waste heat can be transferred by, for example, incorporating the cathode exhaust line 24 into an outer housing of the fuel cell. Additionally, originally submitted claim 1 called for "the housing adapted to transfer waste heat of the fuel cell".

Rejections Under 35 U.S.C. §102

Claims 1-4 stand rejected under 35 U.S.C. §102(e) as being anticipated by Xu (U.S. 6,551,732). Applicants respectfully traverse this rejection.

The Examiner's characterization of the Xu reference teaching use of a heat exchanger to make use of waste heat is incorrect. Xu teaches feeding a substantial portion of the cathode effluent stream to a fuel processor as the oxygen containing gas and water vapor for converting the fuel stream into hydrogen. While Xu discloses an air compressor upstream of the fuel cell cathode, there is no disclosure or suggestion of using fuel cell-produced waste heat to add heat to the cathode exhaust via a heat exchanger. Recovering that waste heat emanating from the fuel cell housing and thermally coupling that heat energy to the cathode exhaust gas line, thereby rendering the fuel cell system more energy efficient, is simply not taught, claimed or suggested by Xu or the remaining prior art of record. Furthermore, Applicants traverse the Examiner's characterization of "a heat exchanger coupled to the fuel cell for receiving waste heat from the housing of the fuel cell" as a recitation of the intended use of the claimed invention not entitled to patentable weight. That allegation is simply wrong. The limitation is directed to the nature of the coupling between the fuel cell and the heat

exchanger. The prior art does not contemplate passing waste heat from a fuel cell to a heat exchanger for further utilization.

Additionally, Xu contains no teaching or suggestion of taking waste heat from the housing of a fuel cell and transferring the waste heat energy to the cathode exhaust flow via a heat exchanger coupled between the fuel cell housing and the cathode exhaust gas line. Claim 1 and its depending claims 2-4 are therefore believed to be patentably distinguishable over Xu.

Claims 1-5 stand rejected under 35 U.S.C. §102(e) as being anticipated by Cownden *et al.* (U.S. 6,316,134). Applicants respectfully traverse this rejection.

Again, the Examiner's characterization of Cownden *et al.* is not correct. Cownden *et al.* discloses a reformer, a fuel stream humidifier and a heat exchanger, all disposed within a furnace vessel associated with the fuel processing subsystem of a fuel cell system. Cownden *et al.* further discloses that the fuel processing subsystem may further comprise a shift reactor that exchanges heat from the cathode exhaust stream directed to the shift reactor from the power generation system. After passing through the shift reactor, the cathode exhaust stream is preferably directed to the furnace burner. All of this deals with Cownden's fuel processing system--not with an expander coupled to a compressor for the cathode input air pressurization.

As with Xu, Cownden *et al.* contains no teaching or suggestion of taking waste heat from the housing of a fuel cell and transferring the waste heat energy to the cathode exhaust flow via a heat exchanger coupled between the fuel cell housing and the cathode exhaust line as set forth in Applicants' claim 1. Independent claim 1 and its

dependent claims 2-5 are therefore believed to be patentably distinguishable over Cownden *et al.*

Rejection Under 35 U.S.C.§103

Claim 5 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Xu in view of Cownden *et al.* The rejection is respectfully traversed.

Without acceding to the correctness of the Examiner's remarks thereover, claim 5 depends directly from claim 1 and is therefore believed to be in condition for allowance for at least the reasons set forth above with respect to claim 1.

CONCLUSION

The Examiner's rejections of the claims under 35 U.S.C. §§102(e), 103 and 112 are improper. The claims are supported by the specification, and the art of record, taken singly or in any combination, fails to disclose or suggest all of the elements of Applicants' claims. Accordingly, it is respectfully submitted that the Examiner has failed to state *prima facia* cases of anticipation, obviousness or non-enablement, and the Examiner's rejections of claims 1-5 should be reversed.

Respectfully submitted,

Dated: August 21, 2007

By: _____
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CLAIMS APPENDIX

CLAIMS ON APPEAL

1. A fuel cell system comprising:

a fuel cell having a housing enclosing an anode chamber, a proton exchange membrane and a cathode chamber, the cathode chamber being separated from the anode chamber by the proton exchange membrane, the housing adapted to transfer waste heat of the fuel cell;

a cathode supply line coupled to a supply of compressed oxygen-containing gas and to the cathode chamber;

a fuel supply coupled to the anode chamber;

a cathode exhaust gas line;

a heat exchanger coupled to the fuel cell for receiving waste heat from the housing of the fuel cell; and

an expansion turbine,

the cathode exhaust gas line fluidly connecting the cathode chamber and the expansion turbine, the heat exchanger being thermally coupled to the cathode exhaust gas line between the cathode chamber and the expansion turbine, whereby the heat exchanger transfers heat energy from the fuel cell to cathode exhaust gas flowing through the cathode exhaust gas line.

2. The fuel cell system of claim 1, wherein the expansion turbine is coupled to the fuel cell for transfer of heat energy from the fuel cell to cathode exhaust gas in the expansion turbine.

3. The fuel cell system of claim 2, further comprising a combustor assembly coupled to the heat exchanger and the expansion turbine for transfer of heat energy to the cathode exhaust gas.

4. The fuel cell system of claim 1, further comprising a combustor assembly coupled to the heat exchanger for transfer of heat energy to cathode exhaust gas flowing through the cathode exhaust gas line.

5. The fuel cell system of claim 1, further comprising a cathode exhaust gas cooler and water separator fluidly connected between the cathode chamber and the heat exchanger.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.